

RECEIVED

MAR 14 2003

TECH CENTER 1600/2900

ENTERED

1600

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/627,165E

DATE: 03/10/2003 P.6
TIME: 13:01:25Input Set : A:\0203.SEQUENCE LISTING.txt
Output Set: N:\CRF4\03102003\I627165E.raw

4 <110> APPLICANT: KIM, Jong-Bae
 6 <120> TITLE OF INVENTION: CRUDE EXTRACT FROM Viscum album coloratum, AND PROTEINS
 7 AND LECTINS ISOLATED THEREFROM
 9 <130> FILE REFERENCE: Korean Mistletoe Lectin
 11 <140> CURRENT APPLICATION NUMBER: 09/627,165E
 12 <141> CURRENT FILING DATE: 2000-07-27
 14 <160> NUMBER OF SEQ ID NOS: 80
 16 <210> SEQ ID NO: 1
 17 <211> LENGTH: 762
 18 <212> TYPE: DNA
 19 <213> ORGANISM: Viscum album coloratum
 21 <220> FEATURE:
 23 <221> NAME/KEY: misc_feature
 25 <400> SEQUENCE: 1
 26 tacgagagggc taagactcag agttacgcat caaaccacgg gcgacgaata tttccgggttc 60
 28 atcacgcttc tccgagatta tgtctcaagc ggaagctttt ccaatgagat accactcttg 120
 30 cgtcagtcta cgatccccgt ctcgatgcg caaagatttg tggtgggtga actcaccaat 180
 32 cagggggggag actcgatcac ggccgccatc gacgttacta acctgtacgt ggtgggttac 240
 34 caagcaggcg accaatccta ctttttgccg gacgcaccag acggcgcgga aaggcatctc 300
 36 ttcaccggca ccaccagatc ctccctccca ttcaccggaa gctacacaga tctggagcga 360
 38 ttcgcccgtc atagggacca gatccctctg ggtagagagg aactcattca atccgtctcg 420
 40 gcccttcgtt ttccgggacg caacactcgt gcccaagctc gttcctttat catcctcatt 480
 42 cagatgatct ccgaggccgc cagattcaat cccatcttat ggagggtcgc ccaatacatt 540
 44 agcagtgggg gggtcatttct gccagacacg tacattctcc agctggagac gagttggggg 600
 46 caacaatcca cgcaagttca gcaactcgac gatggcggtt ttaataaccc aattcggttg 660
 48 actatatcca ctggtgtctt cgtgacgttg agcaatgttc gcgacgtgat cgccagctta 720
 50 gcgatcatgt tgtttgtatg cgaggaccgg ccattcttct ct 762
 54 <210> SEQ ID NO: 2
 55 <211> LENGTH: 254
 56 <212> TYPE: PRT
 57 <213> ORGANISM: Viscum album coloratum
 59 <220> FEATURE:
 61 <221> NAME/KEY: misc_feature
 64 <400> SEQUENCE: 2
 65 Tyr Glu Arg Leu Arg Leu Arg Val Thr His Gln Thr Thr Gly Asp Glu
 66 1 5 10 15
 68 Tyr Phe Arg Phe Ile Thr Leu Leu Arg Asp Tyr Val Ser Ser Gly Ser
 69 20 25 30
 71 Phe Ser Asn Glu Ile Pro Leu Leu Arg Gln Ser Thr Ile Pro Val Ser
 72 35 40 45
 74 Asp Ala Gln Arg Phe Val Leu Val Glu Leu Thr Asn Gln Gly Gly Asp
 75 50 55 60
 77 Ser Ile Thr Ala Ala Ile Asp Val Thr Asn Leu Tyr Val Val Ala Tyr

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/627,165E

DATE: 03/10/2003

TIME: 13:01:25

Input Set : A:\0203.SEQUENCE LISTING.txt

Output Set: N:\CRF4\03102003\I627165E.raw

```

78 65          70          75          80
80 Gln Ala Gly Asp Gln Ser Tyr Phe Leu Arg Asp Ala Pro Asp Gly Ala
81                                     85          90          95
83 Glu Arg His Leu Phe Thr Gly Thr Thr Arg Ser Ser Leu Pro Phe Thr
84                                     100          105          110
86 Gly Ser Tyr Thr Asp Leu Glu Arg Phe Ala Gly His Arg Asp Gln Ile
87                                     115          120          125
89 Pro Leu Gly Arg Glu Glu Leu Ile Gln Ser Val Ser Ala Leu Arg Phe
90                                     130          135          140
92 Pro Gly Ser Asn Thr Arg Ala Gln Ala Arg Ser Phe Ile Ile Leu Ile
93 145                                     150          155          160
95 Gln Met Ile Ser Glu Ala Ala Arg Phe Asn Pro Ile Leu Trp Arg Ala
96                                     165          170          175
98 Arg Gln Tyr Ile Ser Ser Gly Gly Ser Phe Leu Pro Asp Thr Tyr Ile
99                                     180          185          190
101 Leu Gln Leu Glu Thr Ser Trp Gly Gln Gln Ser Thr Gln Val Gln His
102                                     195          200          205
104 Ser Thr Asp Gly Val Phe Asn Asn Pro Ile Arg Leu Thr Ile Ser Thr
105                                     210          215          220
107 Gly Val Phe Val Thr Leu Ser Asn Val Arg Asp Val Ile Ala Ser Leu
108 225                                     230          235          240
110 Ala Ile Met Leu Phe Val Cys Glu Asp Arg Pro Ser Ser Ser
111                                     245          250
114 <210> SEQ ID NO: 3
115 <211> LENGTH: 762
116 <212> TYPE: DNA
117 <213> ORGANISM: Viscum album coloratum
119 <220> FEATURE:
123 <400> SEQUENCE: 3
124 tacgagaggc taagactcag agttacgcat caaaccacgg gcgaccaata tttcaagttc 60
126 atcacgcttc tccgagatca tgtctcaagc ggaagcttgt ccaatcaaat accactcttg 120
128 cggcagtcta ctgtccccgt ctcggatacg cagagatttg tgttggtgga actcagcaat 180
130 caggggggag actcgatcac ggccgccatc gacgttacca atctgtacgt ggtggcttac 240
132 caagcaggca accaatccta ctttttgccg gacgcacctc gcggcgcgga aacgtatctc 300
134 ttcaccggca ccaccgatc ctctctccca ttcaacggaa gctaccctga tctggagcga 360
136 tacgccggac atagggacca gatccctctc ggtatagacc aactcattca atccgtctcg 420
138 gcqcttcggt ttccgggcag caacactcgt gcccgaagtc gttcctttat catcctcatt 480
140 cagatgatct ccgaggccgc cagattcaat cccatcttat ggagggctcg ccaatacatt 540
142 agcagtgggg ggtcatttct gccagacacg tacattctcc agctggagac gagttggggg 600
144 caacaatcca cgcaagttca gcaactcgac gatggcggtt ttaataaccc aattcggttg 660
146 actatatcca ctggtgtctt cgtgacgttg agcaatgttc gcgacgtgat cgccagcyta 720
148 gcgatcatgt tgtttgatg cgaggaccgg ccattcttct ct 762
152 <210> SEQ ID NO: 4
153 <211> LENGTH: 254
154 <212> TYPE: PRT
155 <213> ORGANISM: Viscum album coloratum
157 <220> FEATURE:
159 <221> NAME/KEY: misc_feature
160 <222> LOCATION: 240

```

RAW SEQUENCE LISTING

DATE: 03/10/2003

PATENT APPLICATION: US/09/627,165E

TIME: 13:01:25

Input Set : A:\0203.SEQUENCE LISTING.txt

Output Set: N:\CRF4\03102003\I627165E.raw

161 <223> OTHER INFORMATION: Xaa = any amino acid

163 <400> SEQUENCE: 4

164 Tyr Glu Arg Leu Arg Val Thr His Gln Thr Thr Gly Asp Gln

165 1 5 10 15

167 Tyr Phe Lys Phe Ile Thr Leu Leu Arg Asp His Val Ser Ser Gly Ser

168 20 25 30

170 Leu Ser Asn Gln Ile Pro Leu Leu Arg Gln Ser Thr Val Pro Val Ser

171 35 40 45

173 Asp Thr Gln Arg Phe Val Leu Val Glu Leu Ser Asn Gln Gly Gly Asp

174 50 55 60

176 Ser Ile Thr Ala Ala Ile Asp Val Thr Asn Leu Tyr Val Val Ala Tyr

177 65 70 75 80

179 Gln Ala Gly Asn Gln Ser Tyr Phe Leu Arg Asp Ala Pro Arg Gly Ala

180 85 90 95

182 Glu Thr Tyr Leu Phe Thr Gly Thr Thr Arg Ser Ser Leu Pro Phe Asn

183 100 105 110

185 Gly Ser Tyr Pro Asp Leu Glu Arg Tyr Ala Gly His Arg Asp Gln Ile

186 115 120 125

188 Pro Leu Gly Ile Asp Gln Leu Ile Gln Ser Val Ser Ala Leu Arg Phe

189 130 135 140

191 Pro Gly Ser Asn Thr Arg Ala Gln Ala Arg Ser Phe Ile Ile Leu Ile

192 145 150 155 160

194 Gln Met Ile Ser Glu Ala Ala Arg Phe Asn Pro Ile Leu Trp Arg Ala

195 165 170 175

197 Arg Gln Tyr Ile Ser Ser Gly Gly Ser Phe Leu Pro Asp Thr Tyr Ile

198 180 185 190

200 Leu Gln Leu Glu Thr Ser Trp Gly Gln Gln Ser Thr Gln Val Gln His

201 195 200 205

203 Ser Thr Asp Gly Val Phe Asn Asn Pro Ile Arg Leu Thr Ile Ser Thr

204 210 215 220

W--> 206 Gly Val Phe Val Thr Leu Ser Asn Val Arg Asp Val Ile Ala Ser Xaa

207 225 230 235 240

209 Ala Ile Met Leu Phe Val Cys Glu Asp Arg Pro Ser Ser Ser

210 245 250

213 <210> SEQ ID NO: 5

214 <211> LENGTH: 768

215 <212> TYPE: DNA

216 <213> ORGANISM: Viscum album coloratum

218 <220> FEATURE:

220 <221> NAME/KEY: misc_feature

222 <400> SEQUENCE: 5

223 tacgagaggc taagactcag agttacgcat caaaccacgg gcgacgaata tttccgggttc 60

225 atcaagcttc tccgagactc tgtctcaagc ggaagctttt ccaatgacat accgctcctg 120

227 cctccgtcaa tcccggtctc ctctgcgcag agatttgtgt tgggtggaact cacaatcag 180

229 ttgggaaagt gggaagactc gatcacggcc gccatcgacg ttaccaatct gtacgtggtg 240

231 gcttaccagg caggcgacca atcctacttt ttgcgcgacg caccagacgg cgcggaaagg 300

233 catctcttca ccggcaccac cagatcctct cttcctttca acggaagcta cgctgatctg 360

235 gagcggtacg ccggacatag ggaccggatc cctctgggta gagagccact catacgatcc 420

237 gtctcggcgc ttgattatcc cggcggcagc acgcgcgcc aagccagttc cattattatc 480

RAW SEQUENCE LISTING

DATE: 03/10/2003

PATENT APPLICATION: US/09/627,165E

TIME: 13:01:25

Input Set : A:\0203.SEQUENCE LISTING.txt

Output Set: N:\CRF4\03102003\I627165E.raw

```

239 gtcattcaga tgatctccga ggcggccaga ttcaatccca tcctatggag ggctcgccaa 540
241 tacattaaca gtggggtgtc atatcttcca gacgtgtaca tgctggagct ggaggcgagt 600
243 tggggccaac aatcgaccca agtcacgagc tgcaccgatg gcgtttttaa taaccgaatt 660
245 cggttgggta tatccaccgg caacttcgtg tggttgagca atgttcgcga cgtgatcgcc 720
247 agcttgggga tcatggtggt tgtatgcagg gaccgggtcat cttccct 768
253 <210> SEQ ID NO: 6
254 <211> LENGTH: 256
255 <212> TYPE: PRT
256 <213> ORGANISM: Viscum album coloratum
258 <220> FEATURE:
260 <221> NAME/KEY: misc_feature
262 <400> SEQUENCE: 6
263 Tyr Glu Arg Leu Arg Leu Arg Val Thr His Gln Thr Thr Gly Asp Glu
264 1 5 10 15
266 Tyr Phe Arg Phe Ile Lys Leu Leu Arg Asp Ser Val Ser Ser Gly Ser
267 20 25 30
269 Phe Ser Asn Asp Ile Pro Leu Leu Pro Pro Ser Ile Pro Val Ser Ser
270 35 40 45
272 Ala Gln Arg Phe Val Leu Val Glu Leu Thr Asn Gln Leu Gly Lys Trp
273 50 55 60
275 Glu Asp Ser Ile Thr Ala Ala Ile Asp Val Thr Asn Leu Tyr Val Val
276 65 70 75 80
278 Ala Tyr Gln Ala Gly Asp Gln Ser Tyr Phe Leu Arg Asp Ala Pro Asp
279 85 90 95
281 Gly Ala Glu Arg His Leu Phe Thr Gly Thr Thr Arg Ser Ser Leu Pro
282 100 105 110
284 Phe Asn Gly Ser Tyr Ala Asp Leu Glu Arg Tyr Ala Gly His Arg Asp
285 115 120 125
287 Arg Ile Pro Leu Gly Arg Glu Pro Leu Ile Arg Ser Val Ser Ala Leu
288 130 135 140
290 Asp Tyr Pro Gly Gly Ser Thr Arg Ala Gln Ala Ser Ser Ile Ile Ile
291 145 150 155 160
293 Val Ile Gln Met Ile Ser Glu Ala Ala Arg Phe Asn Pro Ile Leu Trp
294 165 170 175
296 Arg Ala Arg Gln Tyr Ile Asn Ser Gly Val Ser Tyr Leu Pro Asp Val
297 180 185 190
299 Tyr Met Leu Glu Leu Glu Ala Ser Trp Gly Gln Gln Ser Thr Gln Val
300 195 200 205
302 Gln Gln Ser Thr Asp Gly Val Phe Asn Asn Pro Ile Arg Leu Gly Ile
303 210 215 220
305 Ser Thr Gly Asn Phe Val Trp Leu Ser Asn Val Arg Asp Val Ile Ala
306 225 230 235 240
308 Ser Leu Gly Ile Met Val Phe Val Cys Arg Asp Arg Ser Ser Ser Pro
309 245 250 255
312 <210> SEQ ID NO: 7
313 <211> LENGTH: 797
314 <212> TYPE: DNA
315 <213> ORGANISM: Viscum album coloratum
317 <220> FEATURE:

```

RAW SEQUENCE LISTING

DATE: 03/10/2003

PATENT APPLICATION: US/09/627,165E

TIME: 13:01:25

Input Set : A:\0203.SEQUENCE LISTING.txt

Output Set: N:\CRF4\03102003\I627165E.raw

```

319 <221> NAME/KEY: misc_feature
321 <400> SEQUENCE: 7
322 acgatgtaac ctgcactact tccgaaccta cggtagcggtt tgtgggtcga aatggcctgt 60
324 gtctcgacgt cccagagggc gattaccacg atggaagtcg gatacagttg tggccctgca 120
326 agtccaactc cgatcagaat cagctgtgga cgatcagaag ggatggaacc attcgatcta 180
328 atggaaggtg cttgacgacc tatgggtata ctgcgggcag ctatataatg atctacgact 240
330 gtaatagagg ggggtgggac cttactactt ggcagataag gggcaatgga atcatcctta 300
332 atccaagatc catgatggtg atcggaacac catccgggag ccgcggaacc cgtggcacta 360
334 cttttactct gcaaacactg ggttactcat taggacaggg ctggcttgcc agcaatgata 420
336 ccgctcctcg cgaggtaacc atatatggtt tccgcgatca ttgcatggaa actagtggag 480
338 ggaaagtgtg ggttgggact tgtgtgagtg gcaagcagaa ccaaagatgg gctttgtacg 540
340 gggatggttc cattcgcccc aaaccttacc aagaccaatg cctcacctct caggagact 600
342 ccgtagatc cgtaatacaat ttatttagct gcaccgctgg atcgccaagg caacgatggg 660
344 tatttaccaa taaaggggcc attttgaatt taaagaatag gttggccatg gatgtggcgg 720
346 aatcaaattcc aagcctcgc cgaataatca tcttttcagt cactggaaat ccaaatcaaa 780
348 tgtggcttcc cgtgccca 797
353 <210> SEQ ID NO: 8
354 <211> LENGTH: 266
355 <212> TYPE: PRT
356 <213> ORGANISM: Viscum album coloratum
358 <220> FEATURE:
360 <221> NAME/KEY: misc_feature
362 <400> SEQUENCE: 8
363 Asp Asp Val Thr Cys Thr Thr Ser Glu Pro Thr Val Arg Phe Val Gly
364 1 5 10 15
366 Arg Asn Gly Leu Cys Leu Asp Val Pro Glu Gly Asp Tyr His Asp Gly
367 20 25 30
369 Ser Arg Ile Gln Leu Trp Pro Cys Lys Ser Asn Ser Asp Gln Asn Gln
370 35 40 45
372 Leu Trp Thr Ile Arg Arg Asp Gly Thr Ile Arg Ser Asn Gly Arg Cys
373 50 55 60
375 Leu Thr Thr Tyr Gly Tyr Thr Ala Gly Ser Tyr Ile Met Ile Tyr Asp
376 65 70 75 80
378 Cys Asn Arg Gly Gly Trp Asp Leu Thr Thr Trp Gln Ile Arg Gly Asn
379 85 90 95
381 Gly Ile Ile Leu Asn Pro Arg Ser Met Met Val Ile Gly Thr Pro Ser
382 100 105 110
384 Gly Ser Arg Gly Thr Arg Gly Thr Thr Phe Thr Leu Gln Thr Leu Gly
385 115 120 125
387 Tyr Ser Leu Gly Gln Gly Trp Leu Ala Ser Asn Asp Thr Ala Pro Arg
388 130 135 140
390 Glu Val Thr Ile Tyr Gly Phe Arg Asp His Cys Met Glu Thr Ser Gly
391 145 150 155 160
393 Gly Lys Val Trp Val Gly Thr Cys Val Ser Gly Lys Gln Asn Gln Arg
394 165 170 175
396 Trp Ala Leu Tyr Gly Asp Gly Ser Ile Arg Pro Lys Pro Tyr Gln Asp
397 180 185 190
399 Gln Cys Leu Thr Ser Gln Gly Asp Ser Val Arg Ser Val Ile Asn Leu
400 195 200 205

```

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/09/627,165E

DATE: 03/10/2003
 TIME: 13:01:26

Input Set : A:\0203.SEQUENCE LISTING.txt
 Output Set: N:\CRF4\03102003\I627165E.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:4; Xaa Pos. 240
 Seq#:12; Xaa Pos. 161
 Seq#:13; N Pos. 19,57,190,331
 Seq#:14; Xaa Pos. 7,64,111
 Seq#:17; N Pos. 3,6,12,16
 Seq#:18; N Pos. 3,6,12,15
 Seq#:22; Xaa Pos. 4
 Seq#:51; Xaa Pos. 7
 Seq#:61; Xaa Pos. 17
 Seq#:76; Xaa Pos. 4,6

Invalid Line Length:

The rules require that a line not exceed 72 characters in length. This includes spaces.

Seq#:53; Line(s) 1435

VERIFICATION SUMMARY

PATENT APPLICATION: US/09/627,165E

DATE: 03/10/2003

TIME: 13:01:26

Input Set : A:\0203.SEQUENCE LISTING.txt
Output Set: N:\CRF4\03102003\I627165E.raw

L:206 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4 after pos.:224
L:600 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12 after pos.:160
L:635 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:13 after pos.:0
M:341 Repeated in SeqNo=13
L:661 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14 after pos.:0
M:341 Repeated in SeqNo=14
L:813 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:17 after pos.:0
L:828 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18 after pos.:0
L:894 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22 after pos.:0
L:1397 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:51 after pos.:0
L:1557 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:61 after pos.:15
L:1768 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:76 after pos.:0